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Evidence that the radioprotector effect of ascorbic acid depends on the radiation dose rate

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Highlights

- Ascorbic acid alone or with 20 Gy did not modify the development rate.
- Ascorbic acid reduced genetic damage provoked by 20 Gy administered at 36 Gy/h.
- When 20 Gy was administered at 960 Gy/h only 25 mM reduced genetic damage.

Abstract

Many studies have revealed that **ascorbic acid** (Aa) acts as a powerful inhibitor of genetic damage. The objective of the present study was to evaluate the radioprotector effect of Aa at two different **radiation dose** rates. The somatic mutation and **recombination** test in *Drosophila melanogaster* was used. 48 h **larvae** were treated for 24 h with 25, 50 and 100 mM of Aa. After pretreatment, larvae were irradiated with 20 Gy of **gamma rays** administered at 36 or 960 Gy/h. Toxicity, development rate and frequency of mutant spots were recorded. Results provide evidence of a radioprotective effect for all tested concentrations of Aa only when 20 Gy were delivered at 36 Gy/h and only with 25 mM using the 960 Gy/h. To consider the use of Aa as radioprotector or therapeutic agent, it is necessary to know its potential under different situations to avoid unwanted injuries.